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ABSTRACT

Illinois Senate Bill 1644, the recently passed "Asbestos Abatement Act," requires all schools in the state, public and private alike, to remove friable asbestos by whichever comes first: July 1, 1989, or 3 years following the establishment of a system for state funding for corrective action. This document addresses practical considerations in implementing this Act. The first part addresses legal issues arising from the language of the Act. These include the practical definition of "friable asbestos," what to do about ceiling tile and nonfriable asbestos-containing materials, and the definition of "significant health hazard." The next part discusses the three methods of corrective action suggested in the act: enclosure, encapsulation, and removal. Then 10 specifications are listed for removal of asbestos, covering credentials of the contractor, methods of removal, disposal of waste materials, decontamination procedures, and insurance. Procedures for selecting qualified firms for removal and monitoring are next addressed, along with guidelines on preparation of facilities prior to removal. The final section addresses the importance of documentation throughout an asbestos removal project. (TE)

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ASBESTOS ABATEMENT - PRACTICAL CONSIDERATIONS

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Senate Bill 1644 known as the "Asbestos Abatement Act" recently signed into law by Governor Thompson requires all private and public schools to take corrective action with respect to friable asbestos by July 1, 1989 or three years following the establishment of a system for state funding for corrective action whichever date occurs first.

There are several elements of SB1644 which I believe raise questions that must be clarified before schools in Illinois can move forward with asbestos abatement activities.

The Act contains the standard EPA definition of friable and that definition is as follows: "Friable asbestos materials means any material applied onto ceilings, walls, structural members, piping, ductwork, or any other part of the building structure which, when dry, may be crumbled, pulverized or reduced to powder by hand pressure."

One runs into difficulty when attempting to apply this definition in practical situations. For example, "are pipe wrapping and pipe joint coverings typically found in schools built in the 50's and early to mid 60's friable?" If the pipe covering is in good physical condition, i.e., the outer protective covering is intact and has not been damaged, the underlying corrugated asbestos pipe wrapping is not friable according to the EPA definition. Likewise, if the pipe joint covering is intact and the outer protective cover is in good condition, the underlying cementious material containing asbestos is not friable.

However, if the pipe wrapping or pipe joint covering is cut into or the outer cover otherwise damaged, asbestos fibers will be released into the air -- and depending upon the extent of the damage, the amount of fibers could be substantial. This is only one example of the confusion which results and the potential problems which can occur if abatement activities are restricted to only friable asbestos.

Another problem which is not addressed clearly in the Act is that of how to treat ceiling tile. The EPA, as late as April 1983, stated in writing that ceiling tile did not come under their inspection requirements. However, it is not unusual to find up to 20% + amosite asbestos content in ceiling tile installed in school buildings built during the 60's.

The typical tile is hard and not easily crumbled. When wet (by roof leak - and all flat roof schools have roof leaks) the tile will generally lose its structural strength and fall to the floor. Also, when wet, the asbestos fibers in the tile become separated from the binder that originally held the material into a cohesive unit and are leached out by the water in the tile. The fibers then dry out and become airborne in the classroom, hallway or wherever the roof leak occured.

EA 017 637

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Obviously, if a ceiling tile is cut with a saw or drilled into, large amounts of asbestos fibers will be released into the air. It is not uncommon for teachers to fasten decorations to ceiling tiles with thumb tacks or staples -- when these are removed, fibers can be released into the air.

There are large quantities of materials in our schools which can be classified as nonfriable and which contain large concentrations of asbestos fibers which can at any time be accidentally released into the air. Thus, I am firmly convinced that as a practical matter, asbestos abatement activities cannot be confined to only friable asbestos-containing materials.

Corrective action as defined in the "Asbestos Abatement Act" may consist of enclosure, encapsulation or removal. The Department of Health has the responsibility to establish the necessary rules and regulations to determine which method of corrective action is appropriate for the schools.

It is interesting to note that the Act states that "precise scientific data as to the levels at which asbestos material constitutes a hazard to health in educational settings are not yet available - however, mesothelioma has been found among individuals exposed to asbestos in some nonoccupational settings". The Act goes on to say, "therefore it is the purpose of this Act to provide for the identi-fication, containment or removal of those asbestos materials that constitute a <u>significant</u> health hazard in schools to students, school personnel, parents and visitors to such schools".

The question to be asked is two-fold; 1) under what conditions is a health hazard considered significant, and 2) under what what conditions do asbestos-containing materials constitute such a hazard.

Dr. Nicholson and Dr. Selikoff of Mt. Sinai Hospital in New York and others in England and Europe have conducted years of research on asbestos related diseases and have stated many times that there is no known minimum threshold level of exposure below which an individual is safe from contracting one of the asbestos related diseases. Therefore, as a practical matter, <u>any</u> asbestos-containing material has the potential to create a <u>significant</u> health hazard.

Three methods of corrective action are suggested in the Act. They are enclosure, encapsulation, and removal. Enclosure simply means to build a physical seal around the material. There are definite limitations to the use of enclosure. It must be pointed out that with enclosure, an attempt is being made to contain fibers so small they can only be seen under a powerful microscope -- so small that they will remain suspended in the air up to 24 hours or longer. Therefore, an enclosure, in order to be effective, must be absolutely air tight. Such corrective action is pretty much limited to asbestos-wrapped pipes located in pipe tunnels and pipe chases under floors or in between walls.

A practical problem that must be considered when enclosing water pipes is how repairs to broken pipes will be carried out. If the enclosure seal has to be broken at some point in the future, there is a definite risk of releasing large concentrations of fibers into the air. The result may well be that employees and children become inadvertently exposed to a large dose of asbestos fibers.

Encapsulation as a method of corrective action consists primarily of spraying a sealant over the asbestos-containing material. The major problem with encapsulation is in finding a suitable material to use as an encapsulant. The most desirable encapsulant is one which penetrates the material and binds the asbestos fibers so they cannot be released into the air if the material is disturbed in any way. The asbestos abatement industry, as well as the Federal EPA, is still searching for a completely satisfactory encapsulant which can be used as a long-term solution.

A question which must be considered when making the decision to encapsulate the asbestos material is whether the materials will eventually have to be removed. There are instances where sprayed-on asbestos materials were encapsulated with unsuccessful results and subsequently had to be removed. A major problem was then encountered because the surface encapsulant would not permit the water solution used in removal to penetrate the asbestos material -- the end result was a very costly removal project.

If enclosure or encapsulation is used as a method of corrective action, it is important that a formal management maintenance and operation program be established to constantly monitor the condition of the material and to insure that maintenance staff or outside contractors do not inadvertently disburb the material and release asbestos into the air.

I believe that the best corrective method in the long run, considering the safety of children, employees and the community and the potential legal liability of the district is complete removal. Removal is not inexpensive and if done incorrectly can have disastrous consequences for the school district. So while removal may be the best solution, it may well not be the easiest solution to implement.

A successful removal project begins with a qualified and experienced architect and knowledgeable legal counsel. The architect is needed to help plan the scope of the removal project, prepare specifications and assist in selecting a competent contractor, represent the district's interests throughout the removal and clean-up process and during the reinstallation of new material. The legal counsel role is to review specifications, bid documents, contract documents, contractor prequalification criteria, and a variety of other situations which will arise throughout the project to be certain that the district's interests are protected from a legal standpoint.

I cannot stress enough the importance of selecting a good architect -- one who has been involved in asbestos abatement work including removal and who has been involved in some formal training in the proper way to do the job.

After the project has been defined, the next step is to select a good contractor. At this point, the architect's true knowledge about asbestos abatement will become evident. Good specifications on removal should contain at least the following key elements in addition to the scope of the work to be performed:

1. A requirement that the contractor provides documentation that proper training in the use of respirators and other safety equipment has been given to the contractor employees.

2. A requirement that the contractor provides documentation that his employees have had recent physical exams showing the absence of any evidence of asbestos-related disease.

3. Description of the desired method of preparing work place to prevent fiber leaks during removal.

4. Description of removal techniques to be employed including use of amended water to wet down asbestos materials.

5. Proper disposal of waste materials including documentation of location of waste sites where materials were dumped.

6. Method of constructing the decontamination area for contractor employees and others entering or leaving work area.

7. The proper type of air supply system containing required employee safeguards if a Type C respirator is required.

8. Use of negative air system in work place to protect the outside environment.

9. The acceptable cleanliness standard to be achieved after removal (.01 cc/m3 is recommended). The number of cleaning cycles to be completed by the contractor at his cost should also be specified.

10. The amounts and types of insurance to be carried by the contractor for the project.

In addition to the above, the specification should cover such items as responsibility for damage to walls, tile floors, carpeting, light fixtures, furniture etc. Remember, the contractor is using water to saturate asbestos materials in a building that is sealed in a plastic envelope where temperature can easily exceed 100°. The potential for damage to building structures and equipment must not be overlooked.

Now, after the architect has prepared a comprehensive set of specifications, they should be reviewed by the district's legal advisor to be certain that all the potentially costly problem areas are corrected before you go to bid on the project.

The competitive bidding process in Illinois opens the door to many small and inexperienced firms who see the promise of high profits in asbestos abatement work. To guard against having to accept low bid from an unqualified contractor, it is highly recommend that the district prequalify contractors before permitting them to bid. Again, a legal advisor should be called upon to work with the architect in preparing the proper basis for prequalification.

The next step is to select a qualified firm to perform air sampling and monitoring during removal and clean-up. It is important that a firm be selected which has documented credentials on their ability to properly identify asbestos-containing materials in the laboratory.

The Research Triangle Institute in North Carolina has conducted a series of tests of analytical laboratories for the EPA referred to as "round-robins". Laboratories participating in each series of tests are sent material samples --some of which contain different types of asbestos. If the laboratory consistently and correctly identifies the presence or absence of asbestos, as well as the type of fibers, their performance is documented by the EPA and the information made available to the public.

Selecting one of the several firms in Illinois or Michigan which have successfully participated in all the EPA testing programs will certainly improve the chances of getting dependable results.

Above all, the district should not permit (or require) the removal contractor to hire his own laboratory for air monitoring. Air monitoring during and after removal is for the protection of the district. Therefore, the laboratory doing the work must be totally independent of the removal contractor and must have the ability to "shut down the job" if fiber concentrations in the work place during removal exceed standards set forth by the architect (usually OSHA standards).

Don't relax yet, there is still one more important task to be completed before the contractor moves onto the job site -- the work site must be emptied of all of its contents. Every book, every paper, every piece of equipment and every stick of furniture must be removed from every classroom, closet, workroom, office, resource centers, etc. If asbestos is to be removed from only one portion of the building, the moving task is much easier as the remainder of the building can be used for storage.

Assuming that asbestos removal is being conducted during the summer (it should never be done while children and employees are in the buiding) teachers may be able to pack books and other materials in their own rooms just before they leave for the summer. However, you will still need to employ manpower to move boxes, furniture, equipment, etc. Remember also, everything must eventually be put back into place before school starts in the fall.

A word of caution -- the environment within the building during removal becomes quite hot and humid. Therefore, even though room is available to store books, furniture, etc., -- audio visual equipment, pianos, computers, and other moisture and/or temperature sensitive pieces of equipment should be removed from the building and stored elsewhere.

Other potential problem areas in the building are carpeted classrooms, resource centers, offices, etc. The carpet should be overlaid with plywood before the rooms are sealed with polyethelene. This provides a firm base for polyethelene floor covering so that punctures are less likely to occur during removal. If punctures do occur, serious contamination of the underlying carpet can result. If subsequent cleaning with a HEPA vacuum does not remove all fibers, the final solution is to replace the carpet entirely. Be certain to cover the responsibility for rectifying carpet contamination in project specifications and in the contract.

Before work actually commences, a meeting with local fire and police personnel is necessary. Fire alarm systems are generally turned off during removal activities as all electricity throughout the building is shut off to avoid danger from electrical shocks to workers using water during removal activities.

Most abatement work is done during the summer when there is a danger of heat stroke to workers inside the building. In the event the fire department paramedics must treat an injured worker, they cannot simply barge into the work area and remove the victim. If the paramedics have prior knowledge of what is going on, and have been instructed in proper safety precautions, then they will be able to do their job safely and efficiently.

It is important to notify police personnel so they can provide extra surveillance of the school to prevent vandalism of the building which could beak the polyethelene seal of the building and potentially contaminate the surrounding neighborhood.

Documentation of every phase of the asbestos abatement project is essential for several reasons. First, if the district plans to initiate legal action against a manufacturer of asbestos products used in the building, documenta-tion is crucial to the success of the case. Documentation is necessary to protect the district's interests from legal challenges by contractor employees, by district employees, by parents and anyone else who may feel they have a lifetime free meal ticket awaiting them in court.

There are several forms of documentation to be maintained indefinitely by the district. The initial building survey and subsequent sampling of bulk materials and laboratory testing for the presence of asbestos is the beginning point. Keep all laboratory reports on sample analysis as well as the actual samples themselves. If the district does not have both the reports and samples, contact the laboratory and attempt to get them for safekeeping.

Architect's reports of building surveys, specifications for bidding, prequalification of contractors, bid documents, contracts, invoices, contractor payout requests must all be safeguarded and retained indefinitely. A good architect will also prepare field reports when he visits the work site, meets with district personnel, contractors, etc. He should provide copies of these reports for district documentation.

The contractor should also provide the district with a statement signed by each employee on the project stating that he has received safety training in use of respirators and other safety gear. Also, documentation should be provided to the district evidencing a successful physical exam by each contractor employee on the project.

All laborstory reports on air monitoring during removal activities must be maintained. Certainly, air monitoring reports showing a clean building after removal must be maintained indefinitely.

An important phase of documentation often overlooked is that of the actual removal or abatement process itself. Video taping is an excellent form of documentation. Video taping should be done by a qualified technician because his skills might be challenged later in a courtroom.

Video taping should include activities involved in packing and removing all materials, furniture, equipment, etc. from the job site. Preparation of the job site by the contractor, i.e. installing the proper plastic barrier, actual removal activities, disposal of waste material, and subsequent clean up activities must also be documented. Finally, all work to restore the building should be video taped. If the district is doing abatement work in several schools, it is important to document each project.

There are many details involved in a successful asbestos abatement project. The key to success lies in obtaining the most knowledgeable, experienced, and reliable personnel resources available to assist the district. Asbestos abatement is hazardous work and the consequences of mistakes can be too costly to rely completely on the lowest bidder on the street.